

**ABSTRACT**

A variable dispersion compensation to a signal for compensating dispersion present in an optical signal. The invention can be embodied in a dispersion discrimination and compensation system comprising a feedback loop for regulating an amount of dispersion compensation applied by a controllable anti-dispersive element (CADE) to an incoming optical signal. To that effect, the feedback loop comprises a dispersion discriminator for accepting a portion of a signal outgoing from the CADE and to provide a measure of a dispersion characteristic to a processor which controls the amount of dispersion compensation applied by the CADE. The dispersion discrimination and compensation system can be stand-alone or integrated into an optical switch. Furthermore, dispersion compensation can be provided to multichannel optical signals or to partially or totally demultiplexed optical signals.